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AUTHOR Hull, Mary Ann; Sousa, David A.
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ABSTRACT

Results of the 1986 survey of science teaching in the secondary schools of New Jersey are presented in this report. Data from 187 public and non-public secondary schools are organized into the categories of: (1) student enrollment in science courses; (2) professional staffing; (3) program offerings; (4) teaching assignments; (5) science supervisor/chairperson information; (6) curriculum revision; (7) textbooks; and (8) course organization. Highlights of this survey, which is the fifth in a series by the state since 1968 are reviewed. It was found that a slight increase occurred in the percentage of students taking science and that instructional time has increased in biology, chemistry, and physics. Pertaining to staffing, respondents revealed that only seven percent of current science teachers plan to retire within the next four years and that recruitment of new science teachers is less difficult than it was four years ago. It was reported that more schools are developing safety programs and that an increase in the science requirement for graduation is planned. (ML)

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A SURVEY OF SCIENCE TEACHING
IN THE
SECONDARY SCHOOLS OF NEW JERSEY
1985-1986

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A SURVEY OF SCIENCE TEACHING

in the

SECONDARY SCHOOLS OF NEW JERSEY

1985 - 1986

Compiled and Written

by

Mrs. Mary Ann Hull
Science Supervisor
Scotch Plains-Fanwood Public Schools
Scotch Plains, NJ 07076

Dr. David A. Sousa
Coordinator of Support Programs &
Staff Development
West Orange Public Schools
West Orange, NJ 07052

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RANDOLPH HIGH SCHOOL
Randolph, NJ 07869

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INTRODUCTION

This is the fifth in a series of surveys which began in 1968-69 to examine the status of science education in New Jersey secondary schools. In the fourth survey covering 1981-82, non-public schools were added for the first time, and they are again included in this report. The results obtained from non-public schools remain similar to those obtained from public schools.

Because of the growing shortage of qualified science teachers, the 1981-82 survey included questions on teacher turnover, ease of recruitment, and loss of science teachers to the private sector. This survey has retained those questions and added one on anticipated retirement.

In reviewing the data, totals may differ from one question to another. This occurs because not all questions were answered on each questionnaire. To facilitate comparisons, results have been summarized as percentages wherever possible.

The NJSSA expresses its appreciation to those science supervisors who took the time to respond to the survey. We also thank the science homeroom students and Eddie Scher, who did the graphics, at Scotch Plains-Fanwood High School for helping in many ways. We hope the information in this survey will assist efforts to improve science education in New Jersey.

Mary Ann Hull
David A. Sousa

May 1986

NUMBER OF SCHOOLS RESPONDING BY COUNTY

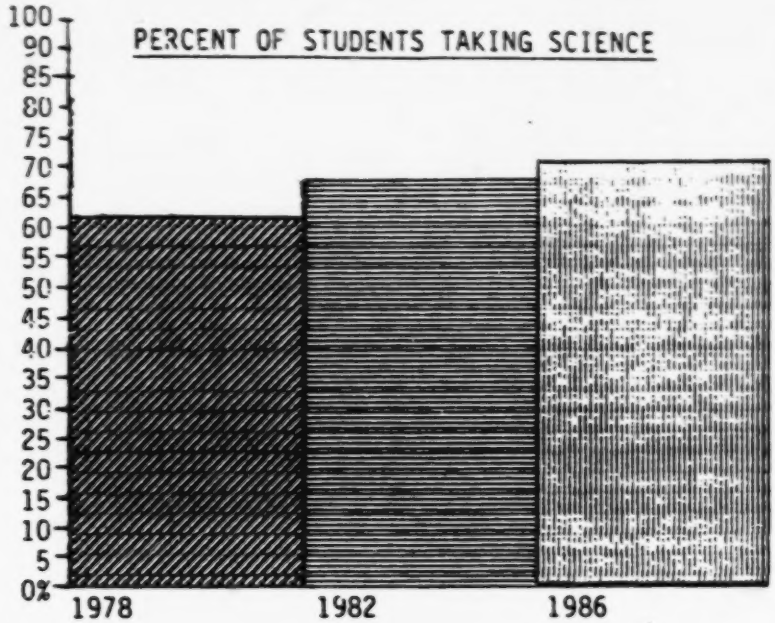
HIGHLIGHTS OF THE 1986 SURVEY

OF

SCIENCE TEACHING IN THE SECONDARY SCHOOLS OF NEW JERSEY

PERCENTAGE OF STUDENTS TAKING SCIENCE

There was a slight increase in the percentage of students taking science in public schools from 67.0% in 1982 to 69.1% in 1986. Non-public school enrollment in science showed a greater increase, from 73.2% in 1982 to 79.3% in 1986.



ALTERNATE ROUTE CERTIFICATION

There were over 4 times as many teachers pursuing alternate route certification in non-public schools as in public schools.

FIELD TRIPS

There was a continuing decline in the proportion of Board of Education Funded field trips and also a slight decline for student paid field trips. A greater percentage of field trips are now paid from other sources.

STAFF CHANGES

There was a significant drop (5.2%) in the percentage of public schools reporting a decrease in science staff. On the other hand, there was a significant increase (11.3%) in the number of non-public schools reporting staff loss.

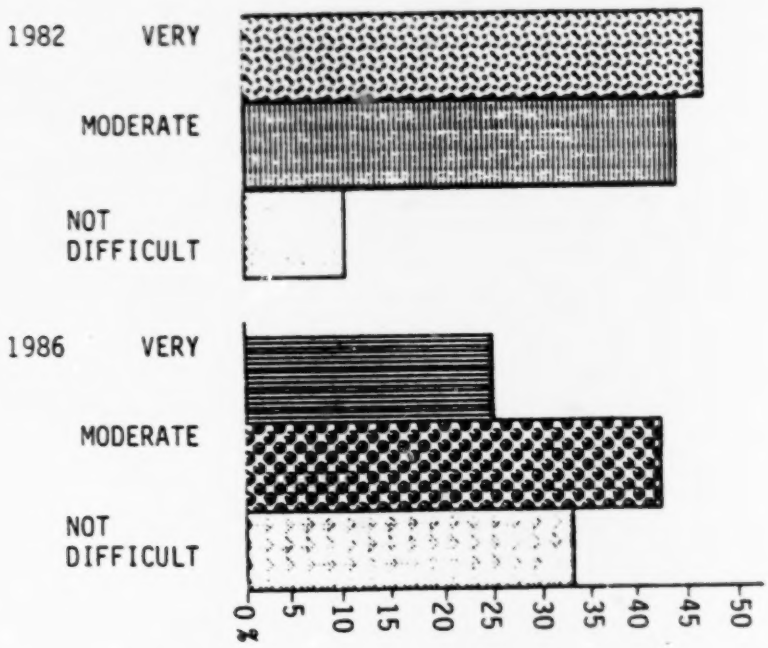
RECRUITMENT OF NEW SCIENCE TEACHERS

It appears that the recruitment of new science teachers is less difficult now than it was four years ago. In 1982 nearly half (46.8%) of the public schools reported that recruitment was very difficult while in 1986, that figure has dropped to only 24.0%. Over three times (from 10.9% in 1982 to 35.5% in 1986) as many public schools reported that recruitment was not difficult. The data for non-public schools is similar though not as dramatic.

The difficult in recruiting new science teachers may have been eased partially by the introduction of the Alternate Route Certification program in 1985. Another factor my have been the recent raising of the state-wide starting salary for new teachers to $18,500 thereby reducing to some extent the salary gap between teaching and industry.

Responding public schools reported that the recruitment of Earth Science, Chemistry, and Physics teachers was considerably more difficult than those in General Science and Biology. In non-public schools, General Science, Biology, and Chemistry teachers were the most difficult to recruit.

DIFFICULTY IN RECRUITING NEW SCIENCE TEACHERS



RETIREMENT

Contrary to popular belief, the percentage of science teachers in both public and non-public schools who are planning to retire in the next four years was barely over 7%. This question was asked for the first time in the 1986 survey. It revealed that there may be less incentive to retire soon since there exists a possibility that the higher minimum starting salary may cause a ripple effect throughout the entire salary guide.

SAFETY

More public schools appear to be offering programs on safety for their staff since 1982 (40.9% in 1982 to 49.0% in 1986). Surprisingly, the percentage of non-public schools declined slightly from 24.2% in 1982 to 22.2% in 1986. The public school increase may have been sparked by the implementation of the New Jersey Right-To-Know Law which requires staff training programs under certain conditions.

In the 1986 Survey, responding schools appear to be more willing to deal with the question of instructional safety programs for students than they were in 1982. Responses in the 1982 Survey were so varied that it was evident there was no common state-wide awareness of the importance of a coordinated, formal safety program for students. Since that time, state and professional association initiatives in this area have encouraged science teachers to include instructional safety programs for their students as part of the science curriculum. Over 81% of the public schools reported such a program in 1986. However, local school boards need to codify their programs into formal board policies.

REIMBURSEMENT FOR CONVENTIONS AND CONFERENCES

There was a significant increase in the nubmer of districts which pay some or all of the expenses for department heads and teachers, reversing an earlier downward trend. This was true for both public and non-public schools.

It also appears that a greater percentage of public and non-public teachers were attending conventions than reported in the 1982 survey.

SUPERVISOR'S BARGAINING UNIT

Since 1982 there has been a strong trend toward establishing bargaining units exclusively for supervisors in both public and non-public schools. More than five times as many public school supervisors in 1986 reported that they had their own bargaining unit as compared to 1982

PROBLEMS CONCERNING SCIENCE SUPERVISORS

Curriculum development was the number one problem cited by both public and non-public school supervisors. Facilities became a more important concern (from seventh to third place) for public school supervisors while decreasing enrollment became less important (from fifth to ninth place).

PROGRAM OFFERINGS

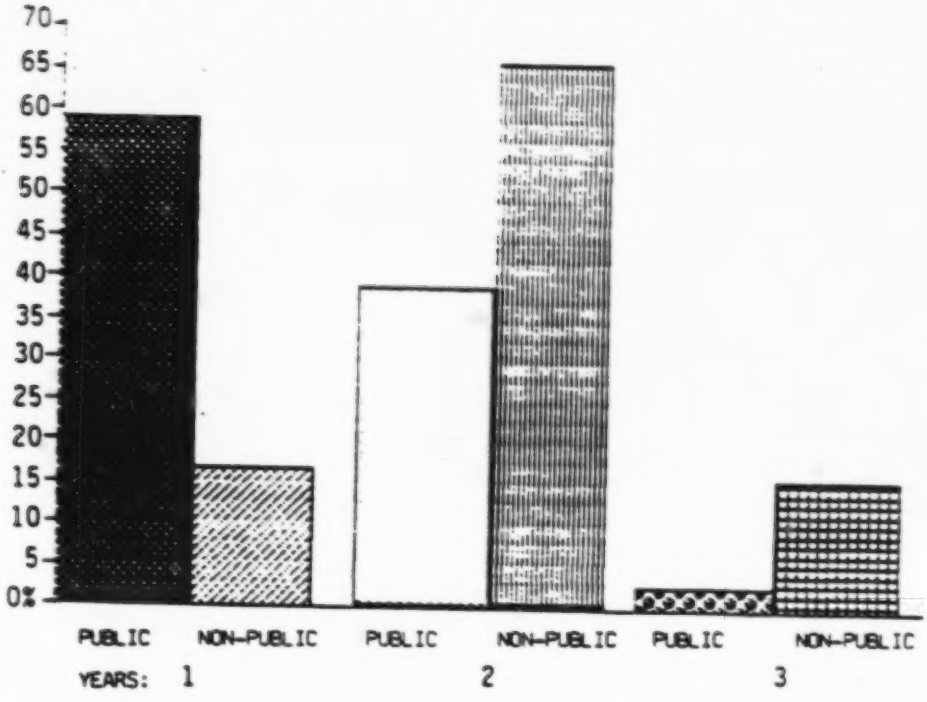
BIOLOGY -- There was a significant decrease (18.5% in 1986 compared to 26.7% in 1982) in the percentage of schools offering biology in grade 9. This result may reflect the growing trend in public schools toward offering Earth Science as an alternative course for 9th grade students.

COMPUTERS -- Laboratory simulations represented greatest use of computers in the science classroom. However, as computer software becomes more diversified, the use of computers in other areas of science instruction is likely to increase. This question will be included in the next survey to determine trends.

PROGRAM OFFERINGS (Cont'd)

GRADUATION REQUIREMENTS -- Over one-third (37.8%) of the public schools reported a two-year science requirement for graduation. A recommendation will be placed before the New Jersey State Board of Education to increase the state science requirement from one to two years. The graph below illustrates that most public schools (58.8%) require one year of science for all students. Most non-public schools (66.6%), however, require two years for graduation.

NUMBER OF YEARS OF SCIENCE REQUIRED
OF ALL STUDENTS FOR GRADUATION



On the other hand, public schools are much more likely to specify a required course while non-public schools allow more choices.

ORGANIZATION OF COURSES

INSTRUCTIONAL TIME -- Biolgy, chemistry and physics all showed increases in instructional time since 1982, reversing a general downward trend that existed from 1978 to 1982. Biology showed the greatest increase (13.5%), followed by physics (5.6%) and chemistry (2.6%).

PROGRAM USE -- BSCS Blue Version has made a strong recovery since 1982 (up 40.7%) after experiencing a significant drop between 1978 and 1982. IPS and Modern Biology (Holt) also showed substantial gains. PSSC Physics, on the other hand, declined sharply (-33.5%) in use.

THE SAMPLE - 1986

Questionnaires were sent to 430 public and non-public secondary schools (382 in 1982) in New Jersey. Just over 43.5% (55% in 1982) of the schools responded as follows:

	Sent Out	Received	% Response
Public ------	310	151	48.7
Non-public ---	120	36	30.0
	430	187	43.5

SURVEY RESULTS

PART I - GENERAL INFORMATION

Percentage of Students Enrolled in Science Courses:

	Public	Non-Public	Total
1986 ---	69.1%	79.3%	70.7%
1982 ---	67.0%	73.2%	68.1%
1978 ---	61.9%	-	61.9%

PART II - PROFESSIONAL STAFFING

A. Number of Fully-Certified Science Teachers

Public: 1,449 Non-public: 196 Total: 1,645

B. Number of K-8 Certified Teacher

Public: 228 Non-public: 29 Total: 257

C. Number and Percentage of Science Teachers Employed in Major Non-Science Activities

Public: 468 (32.3%) Non-public: 109 (55.9%) Total: 577 (35.1%)

D. Number and Percentage of Science Teachers Pursuing Alternate Route Certification

Public: 26 (1.8%) Non-public: 15 (7.7%) Total: 41 (2.5%)

E. Field Trip Funding

Percentage of field trips:		1986	1982	1978
Paid by Students	Public:	31.5%	33.1%	27.2%
	Non-public:	84.0%	68.8%	-
Paid by Bd. of Ed.	Public:	28.9%	32.5%	45.6%
	Non-public:	8.0%	-0-	-
Paid by Various Means	Public:	39.6%	34.4%	27.2%
	Non-public:	8.0%	-0-	-

F. Percentage of Schools Reporting a Decrease in Science Staff Due to Declining Enrollment

	1986	1982	% Change 1982-86
Public:	34.0%	39.2%	-5.2
Non-public:	14.3%	3.0%	+11.3
Total	30.3%	33.3%	-3.0

G. Extent of Difficulty in Recruiting New Science Teachers

	Not Difficult			Moderately Difficult			Very Difficult		
	Public	Non-Pub	Total	Public	Non-Pub	Total	Public	Non-Pub	Total
Gen. Sci.	51.6%	38.5%	48.7%	42.9%	38.5%	41.9%	5.5%	23.1%	9.4%
Earth Sci	31.9%	31.3%	31.8%	38.5%	62.5%	42.1%	29.7%	6.3%	26.2%
Biology	50.0%	36.4%	47.1%	44.3%	45.5%	44.5%	5.7%	18.2%	8.4%
Chemistry	9.3%	6.1%	8.6%	38.2%	33.3%	37.1%	52.5%	60.6%	54.3%
Physics	23.8%	12.5%	20.7%	52.4%	75.0%	58.6%	23.8%	12.5%	20.7%
1982 - 1986 Summary									
1986	35.5%	25.9%	32.7%	41.5%	44.8%	42.2%	24.0%	29.3%	25.1%
1982	10.9%	9.1%	10.6%	42.3%	51.5%	43.9%	46.8%	39.4%	45.5%

H. Retirement Projection

Percentage of total science staff planning to retire within the next four years:

Public: 7.2% Non-public: 7.7% Total: 7.3%

I. Safety

1. Instructional Safety Program for Staff

	YES		NO	
	1986	1982	1986	1982
Public:	49.0%	40.9%	51.0%	59.1%
Non-public:	22.2%	24.2%	77.8%	75.8%
Total	43.8%	38.3%	56.2%	61.7%

2. Instructional Safety Program for Students

Public:	81.6%	*	18.4%	*
Non-public:	66.7%	*	33.3%	*
Total	78.7%		21.3%	

*In the 1982 survey, responses to this question were too varied to compile.

3. Average Number of Hours Spent on Safety Instruction

	Average Hours Spent Per Person	
	Staff	Students
Public:	3.3	2.6
Non-public:	2.4	2.1
Total	3.2	2.5

4. Has the Administrative Body Adopted a Safety Policy?

	YES		NO	
	1986	1982	1986	1982
Public:	45.6%	44.0%	54.4%	56.0%
Non-public:	18.2%	65.5%	81.1%	34.5%
Total	40.6%	47.2%	59.4%	52.8%

J. In-Service/Staff Development

1. Existence of an In-Service/Staff Development Plan for Science:

	YES	NO	Average Days/Year
Public:	31.2%	63.8%	3.6
Non-public:	14.3%	85.7%	2.0
Total	32.1%	67.9%	

2. Availability of Stipend for In-Service on Non-School Days:

	YES	NO	Average Amount
Public:	18.8%	81.2%	$12.80 per hour
Non-public:	17.9%	82.1%	$ 7.00 per hour
Total	18.6%	81.4%	

3. Existence of Curriculum Development During the Summer:

	YES	NO	Average Amount
Public:	59.0%	41.0%	(Insufficient Information)
Non-public:	36.4%	63.6%	
Total	54.8%	45.2%	

4. Reimbursement for Attending Science Conventions and Conferences:

	Some or All Expenses			Overnight Expenses		
	1986	1982	1978	1986	1982	1978
Dept. Head-Public:	86.8%	75.6%	85.6%	43.7%	40.9%	63.8%
-Non-public:	69.4%	73.5%	-	41.7%	41.2%	-
Teacher -Public:	78.8%	71.0%	78.3%	27.2%	35.8%	51.5%
-Non-public:	75.0%	61.8%	-	38.9%	38.2%	-

6. Restriction Exists on Number of Staff Permitted to Participate in Professional Activities on a Given Day:

	YES		NO		If YES, Average # Days
	1986	1982	1986	1982	Permitted (No 1982 Data)
Public:	71.9%	66.5%	28.1%	33.5%	2.2 Days
Non-public:	45.9%	43.8%	54.1%	56.2%	1.5 Days
Total	66.7%	62.8%	33.3%	37.2%	2.1 Days

PART III - PROGRAM OFFERINGS

A. Curriculum Offerings

1. Biology is Offered in Grade 9:

	NO		YES, TO ANY STUDENT WHO REQUESTS IT		YES, TO SELECTED STUDENTS		YES, TO MOST STUDENTS	
	1986	1982	1986	1982	1986	1982	1986	1982
Public:	18.5%	26.7%	11.9%	13.1%	64.2%	56.2%	5.4%	4.0%
Non-Public:	19.4%	29.4%	2.8%	8.8%	61.1%	44.1%	16.7%	17.7%
Total	18.7%	27.1%	10.2%	12.4%	63.6%	54.3%	7.5%	6.2%

2. Advanced Placement Program Offered:

PROGRAM	GRADE 10		GRADE 11		GRADE 12	
	1986	1982	1986	1982	1986	1982
Biology [AP]						
Public:	4.2%	12.6%	33.9%	32.3%	61.9%	55.1%
Non-Public:	9.1%	18.2%	18.2%	18.2%	72.7%	63.6%
Chemistry [AP]						
Public:	1.0%	5.3%	34.0%	40.4%	65.0%	54.3%
Non-Public:	8.3%	5.6%	37.5%	38.9%	51.2%	55.5%
Physics [AP]						
Public:	0	0	21.4%	27.7%	78.6%	72.3%
Non-Public:	0	0	45.8%	25.0%	54.2%	75.0%

NONE OFFERED	1986	1982
Public:	32.1%	33.5%
Non-Public:	41.7%	35.3%
Total	34.1%	33.8%

B. Use of Computers in Science Program:

	COMPUTER ASSISTED INSTRUCTION	BASIC SCIENCE SKILLS	LAB SIMULATION	LAB INTERFACING	DATA REDUCTION
Public:	44.7%	28.5%	64.2%	41.5%	51.2%
Non-Public:	22.7%	40.9%	54.5%	27.3%	31.8%
Total	41.4%	30.3%	62.8%	39.3%	48.3%

Number of Class Periods Per Year Computers are Used in Each Course:

	Gen/Physical Science	Earth Science	Biology	Chemistry	Physics
Public:	3.4	1.7	6.0	9.6	10.7
Non-Public:	1.7	1.4	6.1	5.8	6.5
Total	3.2	1.7	6.0	9.1	10.2

C. Science Graduation Requirement

1. Number of Years of Science Required of All Students for Graduation

	Percentage of School Reporting		
	1 Year	2 Years	3 Years
Public:	58.8%	37.8%	3.4%
Non-Public:	16.7%	66.6%	16.7%
Total	50.5%	43.5%	6.0%

2. Are Specific Science Courses Required?

	YES	NO
Public:	70.3%	29.7%
Non-Public:	16.7%	83.3%
Total	56.5%	43.5%

PART IV - TEACHING ASSIGNMENTS

Note: Responses to questions on

--- number of preparations per teacher
--- assignment of additional duties, and
--- preparation periods in lieu of supervisory duties

were too varied and inconclusive to tabulate.

A. Are Science Teachers Provided with Additional Preparation Periods?

	YES	NO
Public:	27.3%	72.7%
Non-Public:	27.8%	72.2%
Total	27.4%	72.6%

B. Are Paid Laboratory Assistants Provided?

	YES		NO	
	1986	1982	1986	1982
Public:	9 9%	7.2%	90.1%	92.8%
Non-Public:	5.6%	13.3%	94.4%	86.7%
Total	9.1%	8.3%	90.9%	91.7%

PART V - SCIENCE SUPERVISOR/CHAIRPERSON INFORMATION

			PUBLIC		NON-PUBLIC	
			1986	1982	1986	1982
A.	Average Years of Teaching Experience		21.4	19.4	17.5	18.3
B.	Average Years as Department Chairperson		10.0	9.0	8.6	8.4
C.	Average Number of Teaching Periods per Week		12.3	11.5	19.6	21.7
D.	Range of Teaching Periods per Week		0-30	0-35	0-35	0-34
E.	Average Number of Teachers in Department		10.1	10.3	6.3	5.5
F.	Supervisors Hold a Supervisor's Certificate:	YES:	89.9%	90.2%	8.3%	9.1%
		NO:	10.1%	9.8%	91.7%	90.9%
G.	Is It a Requirement for the Position?	YES:	83.2%	74.6%	-0-	-0-
		NO:	16.8%	25.4%	100.0%	100.0%
H.	Distribution of Responsibilities					
	Percentage Responsible for Each Area:					
	Supervision/Evaluation		88.4%	85.8%	86.1%	87.9%
	Curriculum Development/Evaluation		97.3%	96.6%	83.3%	93.9%
	Inventory of Equipment/Supplies		99.3%	97.7%	88.9%	93.9%
	Supervisors Used as Substitutes		88.4%	85.8%	36.1%	30.3%
	Teaching		90.4%	85.8%	36.1%	97.0%
	Scheduling		87.0%	86.9%	33.3%	45.4%
	Budget Building		97.9%	95.4%	74.3%	57.6%
	Ordering and Receiving		100.0%	94.3%	79.8%	78.8%
	Recruitment		70.5%	70.4%	38.5%	36.4%
	Interviewing		91.8%	85.8%	71.6%	69.7%

I. In Which Bargaining Unit is Supervisor's Position?

	Administrative		Supervisors		Teachers	
	1986	1982	1986	1982	1986	1982
Public:	54.6%	44.8%	35.5%	6.9%	9.9%	48.3%
Non-Public:	15.2%	16.0%	48.4%	-0-	36.4%	84.0%

J. Compensation for Duties as Science Chairperson/Supervisor

1. Released Time

	YES	NO	Average Periods Per Week
Public:	74.5%	25.5%	6.6
Non-Public:	53.3%	46.7%	2.0
Total	70.0%	30.0%	5.6

J. Compensation for Duties as Science Chairperson/Supervisor (Cont'd)

2. Receive Straight Administrative Salary

	YES	NO
Public:	55.5%	44.5%
Non-Public:	8.7%	91.3%
Total	47.9%	52.1%

3. Combination of Teachers Salary plus Stipend

	YES	NO
Public:	80.2%	19.8%
Non-Public:	63.6%	36.4%
Total	76.1%	23.9%

4. Determination of Stipend

Responses to this question were too varied to summarize

K. Department Meetings

1. Frequency of Department Meetings

	Weekly		Monthly		Other	
	1986	1982	1986	1982	1986	1982
Public:	5.4%	8.0%	67.1%	64.2%	27.5%	27.8%
Non-Public:	24.2%	14.8%	42.4%	59.3%	33.4%	25.9%
Total	8.8%	8.9%	62.6%	63.5%	28.6%	27.6%

2. When Held

	During School Day		After Regular School Hours	
	1986	1982	1986	1982
Public:	22.8%	23.4%	77.2%	76.6%
Non-Public:	53.1%	54.5%	46.9%	45.5%
Total	28.6%	28.1%	71.4%	71.9%

L. Problems Concerning Science Supervisors

PUBLIC:

Problem	Rank		% of Supervisors Ranking Problem in 1st Or 2nd Place	
	1986	1982	1986	1982
Curriculum Development	1	(*)	33.6%	(*)
Staffing	2	1	28.6%	62.7%
Facilities	3	7	24.4%	19.1%
Staff Development	4	3	23.5%	48.8%
Financial Support	5	2	22.7%	55.4%
Maintenance of Supplies	6	4	22.7%	36.1%
Recruitment	7	6	16.0%	31.0%
Student Scheduling	8	(*)	15.1%	(*)
Decreasing Enrollment	9	5	10.9%	34.2%

(*) Not included in 1982 survey

L. Problems Concerning Science Supervisors

NON-PUBLIC:

Problem	Rank 1986	Rank 1982	% of Supervisors Ranking Problem in 1st or 2nd Place 1986	% of Supervisors Ranking Problem in 1st or 2nd Place 1982
Curriculum Development	1	(*)	45.2%	(*)
Staff Development	2	1	25.8%	71.4%
Maintenance of Supplies	3	5	25.8%	27.8%
Facilities	4	6	22.6%	25.0%
Staffing	5	2	19.4%	68.2%
Student Scheduling	6	(*)	16.1%	(*)
Financial Support	7	3	16.1%	40.0%
Recruitment	8	4	12.9%	36.4%
Decreasing Enrollment	9	7	6.5%	0.0%

(*) Not included in 1982 survey

PART VI - CURRICULUM REVISION

A. Curriculum Revision (Not asked in 1982 survey)

1. Frequency of Revision

	Yearly	Every 2-3 Years	4 Years or More
Public:	23.9%	38.4%	37.7%
Non-Public:	54.8%	32.3%	12.9%
Total	29.6%	37.3%	33.1%

2. Participants in Revision (Percentage of each category indicated)

	Teachers	Students	Administration	Parents/Community
Public:	96.5%	9.0%	64.6%	9.7%
Non-Public:	100.0%	15.2%	63.6%	3.0%
Total	97.2%	10.2%	64.4%	8.5%

PART VII - TEXTBOOKS USED IN PUBLIC AND NON-PUBLIC SCHOOLS

Texts specified by four or more public and non-public schools are listed below for both first and second year courses. Not every school indicated the text(s) used.

First-Year Courses

TITLE	AUTHOR(S)	PUBLISHER	NO. OF SCHOOLS
EARTH SCIENCE:			
Earth Science	Namowitz	Heath	35
Modern Earth Science	Ramsey, et al.	Holt	28
Focus on Earth Science	Bishop, et al.	Merrill	22
ESCP (Investigating the Earth)	American Geological Institute	Houghton Mifflin	14
Pathways in Science	Oxenhorn	Globe	4
PHYSICAL SCIENCE:			
IPS	Haber-Schaim, et al.	Prentice Hall	55
Focus on Physical Science	Heimler, Prince	Merrill	26
Physical Science	Ramsey, et al.	Holt	11
General Science	Ramsey, et al.	Holt	7
Modern Physical Science	Tracy, et al.	Holt	7
General Science	Brockway, et al.	Allyn & Bacon	5
Principles of Science	Heimler, Neal	Merrill	5
BIOLOGY:			
Modern Biology	Otto, et al.	Holt	93
BSCS Blue Version	BSCS Team	Heath	44
Biology: Living Systems	Oram, et al.	Merrill	26
BSCS Yellow Version	BSCS Team	Harcourt Brace	15
Biology: An Everyday Experience	Kashel, et al.	Merrill	15
BSCS Green Version	BSCS Team	Houghton Mifflin	13
Biology	Smallwood, et al.	Silver Burdett	13
Biology	Slesnick, et al.	Scott Foresman	12
Biology	Gottfried	Prentice Hall	10
Biology: Study of Life	Schraer, et al.	Cebco	8

TITLE	AUTHOR(S)	PUBLISHER	NO. OF SCHOOLS
Pathways in Biology	Oxenhorn	Globe	7
Focus on Life Science	Heimler, et al.	Merrill	6
CHEMISTRY:			
Modern Chemistry	Metcalf, et al.	Holt	85
Chemistry: A Modern Course	Smoot, et al.	Merrill	43
Chemistry	Masterton, et al.	Holt	25
Chemistry: Study of Matter	Dorin	Cebco	19
Chemistry: Experiments & Principles	O'Connor, et al.	Heath	17
Action Chemistry	Bolton, et al.	Holt	16
Chemistry: Experimental Foundations	Parry, et al.	Prentice Hall	16
Chemistry	Choppin, et al.	Silver Burdett	10
Basic Chemistry	Seese, et al.	Prentice Hall	6
Foundations of Chemistry	Toon, Ellis	Holt	6
Concepts in Chemistry	Greenstone, Harris	Harcourt	4
PHYSICS:			
Modern Physics	Williams, et al.	Holt	62
Physics: Principles & Problems	Murphy, Smoot	Merrill	40
PSSC	Haber-Schaim, et al.	Heath	29
Project Physics	Rutherford, et al.	Holt	22
Concepts in Physics	Miller, et al.	Harcourt Brace	14
Physics: Its Methods & Meanings	Taffel	Allyn & Bacon	13
College Physics	Sears, Zamansky	Addison-Wesley	7
Physics	Genzer, et al.	Silver Burdett	6

Second-Year Courses

BIOLOGY:			
Biology	Curtis	Worth	26
Biology	Keeton	Norton	24
Biology	Silberstein, Brown	Saunders	12
Human Physiology	Morrison, et al.	Holt	12
Elements of Biology	Weisz, et al.	McGraw Hill	9

TITLE	AUTHOR(S)	PUBLISHER	NO. OF SCHOOLS
CHEMISTRY:			
Chemistry	Masterton, et al.	Saunders	17
Chemical Principles	Masterton, et al.	Holt	12
College Chemistry	Nebergal, et al.	Heath	9
Chemistry: Principles & Practices	Sienko, Plane	McGraw Hill	8
Chemistry	Mortimer	Van Nostrand	4
Chemistry: The Central Science	Brown, et al.	Prentice Hall	4
PHYSICS:			
University Physics	Sears, Zamansky	Addison-Wesley	19
Physics	Halliday, Resnick	Wiley	10
College Physics	Miller	Harcourt Brace	5

TOP TEXTBOOKS

1986 (N = 187)*

COURSE		
Earth Science	Earth Science, Namowitz	18.7%
	Modern Earth Science, Ramsey et al	15.0%
Physical Science	IPS	29.4%
	Focus on Physical Science	13.9%
Biology	Modern Biology	49.7%
	BSCS- Blue Version	23.5%
	Biology: Living Systems	13.9%
Chemistry	Modern Chemistry	45.4%
	Chemistry: A Modern Course	23.0%
Physics	Modern Physics	33.2%
	Physics: Principles & Problems	21.4%
	PSSC	15.5%

*Number of Respondents

TOP TEXTBOOKS 1969 - 1986

COURSE	1986 (N = 187)*		1982 (N = 210)*		1978 (N = 143)*		1974 (N = 138)*		1969 (N = 168)*	
EARTH SCIENCE	EARTH SCIENCE, Namowitz	18.7%	EARTH SCIENCE, Namowitz	11.4%	EARTH SCIENCE, Namowitz	15.4%	ESCP	15.2%	ESCP	25.7%
	MODERN EARTH SCIENCE, Ramsey, et al.	15.0%							EARTH SCIENCE, Namowitz	3.8%
PHYSICAL SCIENCE	IPS	29.4%	IPS	25.2%	IPS	23.8%	IPS	21.7%	IPS	17.4%
	FOCUS ON PHYSICAL SCIENCE	13.9%	FOCUS ON PHYSICAL SCIENCE	8.4%						
					ISCS	9.8%	ISCS	8.0%		
BIOLOGY	MODERN BIOLOGY	49.7%	MODERN BIOLOGY	43.8%	MODERN BIOLOGY	52.4%	MODERN BIOLOGY	32.6%	MODERN BIOLOGY	38.3%
	BSCS Blue	23.5%	BSCS Blue	16.7%	BSCS Blue	21.7%	BSCS Blue	29.7%	BSCS Blue	16.2%
	BIOLOGY: LIVING SYSTEMS	13.9%	BSCS Green	12.8%	BSCS Green	21.0%	BSCS Green	31.9%	BSCS Green	15.7%
			BSCS Yellow	10.5%	BSCS Yellow	14.6%	BSCS Yellow	33.3%	BSCS Yellow	19.5%
CHEMISTRY	MODERN CHEMISTRY	45.4%	MODERN CHEMISTRY	37.6%	MODERN CHEMISTRY	46.2%	MODERN CHEMISTRY	27.5%	MODERN CHEMISTRY	42.9%
	CHEMISTRY: A MODERN COURSE	23.0%	CHEM STUDY	25.2%	CHEM STUDY	43.4%	CHEM STUDY	48.6%	CHEM STUDY	35.6%
PHYSICS	MODERN PHYSICS	33.2%	MODERN PHYSICS	31.4%	MODERN PHYSICS	25.6%	MODERN PHYSICS	13.0%	MODERN PHYSICS	33.4%
	PHYSICS: PRINCIPLES & PROBLEMS	21.4%	PSSC	23.3%	PSSC	31.5%	PSSC	45.6%	PSSC	46.6%
	PSSC	15.5%	PROJECT PHYSICS	20.0%	PROJECT PHYSICS	30.8%	PROJECT PHYSICS	38.4%		

*Number of Respondents

PART VIII - ORGANIZATION OF COURSES

A. Information on Subject Matter Organization

COURSE	# OF SCHOOLS TEACHING COURSES	GRADE TAUGHT TO HIGHEST % OF STUDENTS		AVERAGE MINUTES/WEEK		AVERAGE CLASS SIZE		AVERAGE FREQUENCY OF DOUBLE PERIODS	
		PUBLIC	NON-PUB	PUBLIC	NON-PUB	PUBLIC	NON-PUB	PUBLIC	NON-PUB
PHYSICAL SCIENCE									
IPS	55	9	9	215	202	21	20	0	0
FOCUS ON PHYSICAL SCIENCE	26	9	9	220	211	25	21	0	0
EARTH SCIENCE									
NAMOWITZ	35	9	9	220	240	24	18	0	0
MODERN	28	9	9	220	220	25	19	0	0
BIOLOGY									
MODERN BIOLOGY	93	10	10	243	265	25	24	1	1
BSCS Blue	44	10	10	267	257	23	20	1	1
LIVING SYSTEMS/ MERRILL	26	10	10	260	252	24	20	1	1
CHEMISTRY									
MODERN CHEMISTRY	85	11	11	276	223	22	20	1	1
CHEMISTRY/SMOOT	43	11	11	279	257	23	19	1	1
PHYSICS									
MODERN/HOLT	62	12	12	276	260	21	19	2	2
PROBLEMS/SMOOT	40	12	12	288	279	22	18	1	2
PSSC/HEATH	29	12	12	301	275	22	18	2	2
2ND YEAR BIO									
CURTIS/WORTH	26	12	12	276	260	18	18	1	1
2ND YEAR CHEMISTRY									
CHEMISTRY/SAUNDERS	17	12	12	268	242	17	14	1	1
2ND YEAR PHYSICS									
SEARS/ZAMANSKY	19	12	12	277	243	16	14	1	1

PART VIII - ORGANIZATION OF COURSES (Cont'd)

B. Trends Since 1978

AREA	COURSE	1978	1982	1986	Percent Change From 1982 To 1986
Instructional Time (Minutes Per Week)	Biology	243	222	252	+13.5%
	Chemistry	266	270	277	+ 2.6%
	Physics	291	270	285	+ 5.6%
Program Use (% of Schools Using Program)	IPS	23.8%	25.2%	29.4%	+16.7%
	BSCS Blue	21.7%	16.7%	23.5%	+40.7%
	Modern Biology (Holt)	52.4%	43.8%	49.7%	+13.5%
	PSSC Physics	31.5%	23.3%	15.5%	-33.5%